

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.

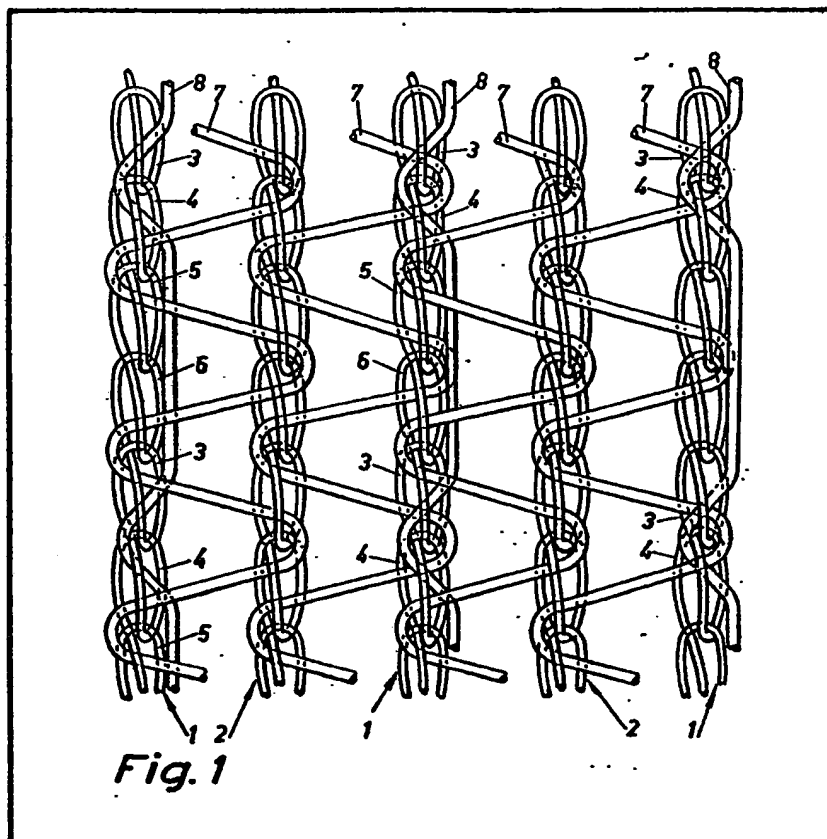
(12) UK Patent Application (19) GB (11) 2 038 382 A

- (21) Application No 7942402
(22) Date of filing 7 Dec 1979
(30) Priority data
(31) 7813242
(32) 22 Dec 1978
(33) Sweden (SE)
(43) Application published
23 Jul 1980
(51) INT CL²
D04B 21/00
(52) Domestic classification
D1K 24A10 24A11 24A6
24A9
(56) Documents cited
GB 1352041
GB 1340591
GB 1167529
"Warp Knitting
Technology" D. F. Paling
Pub. by Columbine Press
see p. 307
(58) Field of search
D1K
(71) Applicant
Ab Elser, Nils
Jakobssongatan 5, S-
502 58 Borås, Sweden
(72) Inventor
Kjell Eng
(74) Agent
F. J. Cleveland &
Company

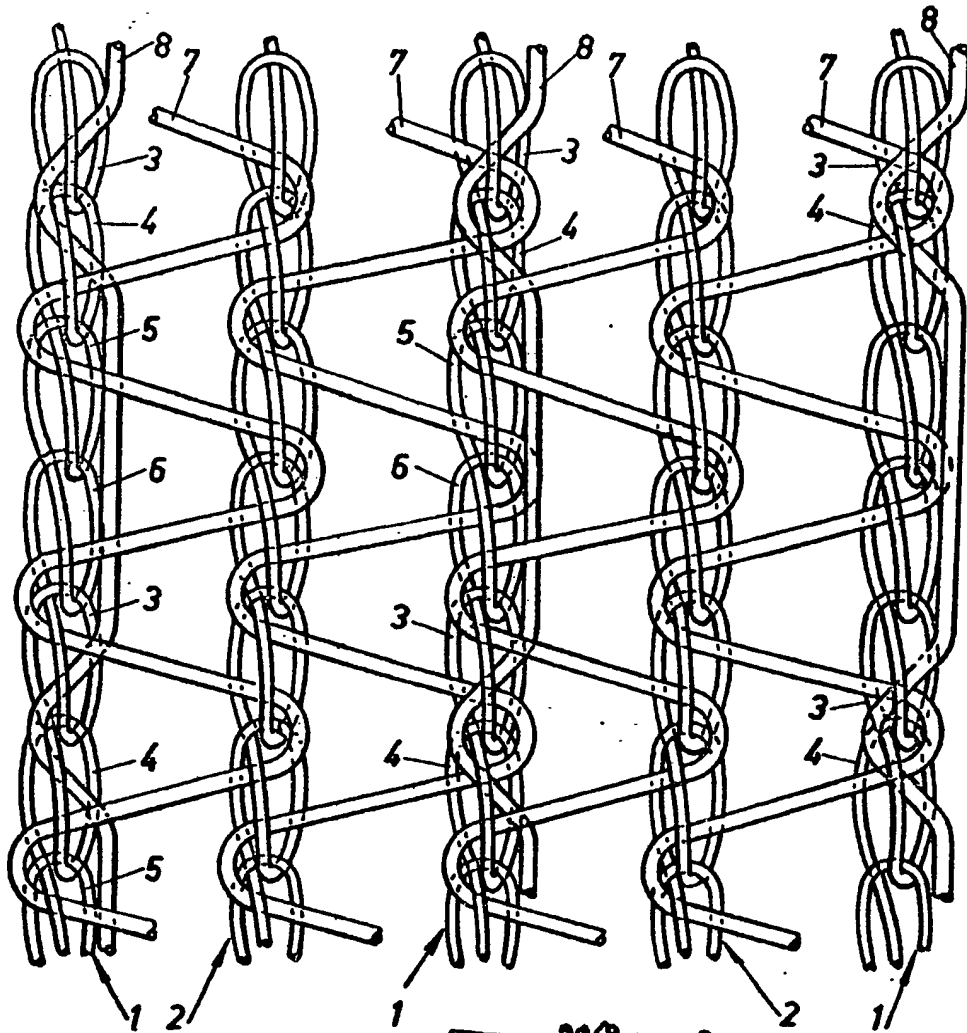
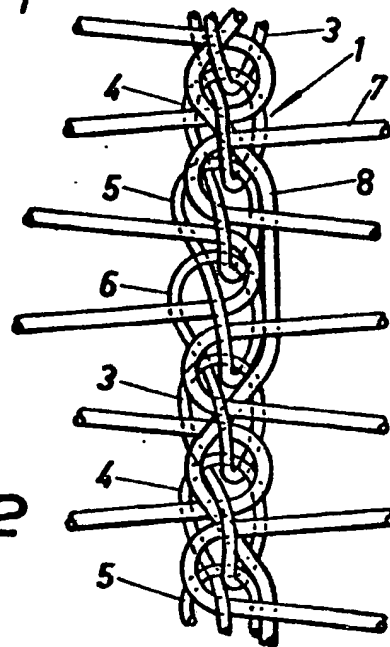
(54) An Improved Warp Knitted
Elastic Textile Product

(57) An elastic textile product
consisting of a warp knitted fabric
comprising lengthwise extending
chains of meshes e.g. polyester along
which extend resiliently stretchable
threads 8 e.g. rubber. To prevent
the textile product from stretching to
such a degree when in use that it is
permanently deformed, the resiliently
stretchable threads pass through

selected meshes in the mesh chains,
said meshes positioned at regular
intervals corresponding to a multiple
of the partition of the mesh rows, from
one side of the chain, through the
respective mesh and out at the same
side of the chain, whereby the
stretchable threads become loosely
interconnected with these selected
meshes, but upon stretching of the
fabric, are momentarily clamped to
said fabric in said meshes. The chains
are connected by non-elastic laid in
threads 7, e.g. polyester.



GB 2 038 382 A

*Fig. 1**Fig. 2*

SPECIFICATION

An Improved Elastic Textile Product

A large number of various elastic textile products are already known, both woven and knitted ones. In woven products, the elasticity and stretchability are achieved by spacing the threads thinly apart and relaxation of the weave, and in knitted products by using rubber threads which in accordance with one prior-art design are knitted together with all the meshes in each chain of meshes. In both cases the range of stretchability and the stretching power are difficult to control.

According to the present invention we provide an elastic textile product comprising a knitted fabric incorporating lengthwise chains of meshes along which chains are arranged resiliently stretchable threads, characterised in that the stretchable threads, while being slightly tensioned, are arranged to interconnect selected meshes in the mesh chain, said meshes positioned in said mesh chains at regular intervals corresponding to a multiple of the partition between the rows of meshes, the interconnection effected by passing the threads through said selected meshes from one side of the chain, through the respective mesh and out at the same side of the chain, whereby the stretchable threads are loosely interconnected with said meshes but, upon stretching of the fabric, are momentarily clamped thereto in said meshes.

Owing to the interconnection between the resiliently stretchable threads and the meshes at predetermined distances and because of the tightening of the meshes about the threads at the points of interconnection when the fabric is stretched, the threads will be stretched only to the extent permitted by the elongation of the meshes when the fabric is being used. In other words, the knitting of the fabric may be adjusted to ensure that the elastic limit of the rubber threads is never exceeded when the product can be controlled by adequate choice of the distance between the points of interconnection of the resiliently stretchable threads with the meshes. The interconnection of the stretchable threads with the meshes is easily performed during the very manufacture of the knitted fabric, while stretching said elastic threads slightly.

The invention will be described in closer detail in the following with reference to the Figures of the accompanying drawing, in which:—

Figure 1 shows on an enlarged scale the mesh pattern of a textile product in accordance with the subject invention, and

Figure 2 being on the same scale as Figure 1, shows the middle chain of meshes after relaxation of the fabric.

The textile product shown in the drawings is manufactured in a warp knitting machine, the chains 1, 2, of meshes 3, 4, 5, 6 being interconnected by interconnecting threads 7. The threads of the mesh chains 1, 2 — which could have a density of appr. 17 meshes per centimeter — as well as the interconnecting threads 7

preferably consist of polyester having a thickness of 167 decitex. Along every second mesh chain 1 extend rubber threads 8 around which is spun a cover of nylon. The rubber threads 8, while being slightly tensioned, are interconnected with the meshes 4 in said mesh chains at regular intervals. In accordance with the embodiment illustrated, the rubber threads 8 are interconnected with every fourth mesh 4. At the points of interconnection, the rubber thread 8 passes through a mesh 4 from one side of the mesh chain 1 and emerges at the same side of the chain and from the point of interconnection the thread 8 extends freely to the fourth mesh 4 in the same chain with which mesh 4 the thread 8 is interconnected in the manner indicated, and so on. Upon relaxation of the textile product (Figure 2) the rubber threads 8 press the intermediate meshes 3, 6, 5 in the mesh chains 1 closer together in their lengthwise extension in an outwards bow-shape. In this position, the rubber threads 8 are loosely interconnected with the meshes and able to move somewhat in the lengthwise direction of the mesh chains 1. On the other hand, when the knitted fabric is stretched while in use, the rubber threads 8 are stretched and the meshes 3, 6, 5, resume their shape illustrated in (Figure 1). Upon continued stretching of the product the meshes are somewhat lengthened, whereby the meshes, through which pass the rubber threads 8, clamp the rubber threads to the fabric. Further elongation of the product is, however, prevented by the elongated meshes. Consequently, there is no risk that the rubber threads 8 will be stretched beyond their elastic limit.

The interconnecting threads 7 are interwoven with at least those meshes 4 of the mesh 4 of the mesh chains 1 through which pass the resiliently stretchable threads 8. In this manner, they exert an additional clamping action on the latter threads 8, securing them to the meshes 4.

The threads in the mesh chains 1, 2 and also the interconnecting threads 7 are preferably textured and consequently the product is not entirely unresilient laterally. On the other hand in the lengthwise direction of the chains 1, 2 of meshes, the product has considerable stretchability, as indicated above. On account of the resiliency of the rubber threads 8, the product resumes its original shape when slackened (Figure 2).

The product may be made more difficult to stretch if a rubber thread 8 is intertwined also with the mesh chains 2. In this manner it is possible to adjust the degree of stretchability of the product by introducing rubber threads in each mesh chain, every other mesh chain or every third mesh chain and so on, in the knitted fabric.

As a rule, a thickness of approximately 1380 decitex should be chosen for the rubber thread 8 but other decitex sizes are possible. Instead of rubber threads other resilient elastomer threads could be used.

As mentioned above and illustrated in the

drawings, the resiliently stretchable threads 8 are interconnected with each fourth mesh in the mesh chains 1. In some types of products it might be more suitable to bind the threads 8 to every second or every third mesh, etc.

- 5 The material of the threads in the mesh chains 1 and 2 as well as that of the interconnecting threads 7 is independent of the invention. Instead of polyester some other synthetic material could be used for these threads. Also cotton threads may be used. The rubber threads 8 need not have a cover spun about them. The textile product could with advantage be used for elastic bandages but other applications are possible where there is a need for a product which allows stretching in one direction but is comparatively unstretchable in another direction.

Claims

1. An elastic textile product comprising a knitted fabric incorporating lengthwise chains of meshes along which chains are arranged resiliently stretchable threads, characterised in that the stretchable threads, while being slightly tensioned, are arranged to interconnect selected meshes in the mesh chain, said meshes positioned in said mesh chains at regular intervals corresponding to a multiple of the partition between the rows of meshes, the interconnection effected by passing the threads through said selected meshes from one side of the chain, through the respective mesh and out at the same

side of the chain, whereby the stretchable threads are loosely interconnected with said meshes but, upon stretching of the fabric, are momentarily clamped thereto in said meshes.

- 35 2. The elastic textile product according to claim 1, wherein a stretchable thread is arranged only in every other chain of meshes.

3. The elastic textile product according to claim 40 1 or claim 2, wherein the chains of meshes are mutually interconnected by interconnecting threads which interweave with at least those meshes in the mesh chains through which pass the resiliently stretchable threads.

- 45 4. The elastic textile product, according to any one of the preceding claims, wherein the elastic threads are interconnected with each third, fourth, or fifth mesh in the mesh chains.

5. The elastic textile product according to any 50 one of the preceding claims, wherein the knitted fabric is made from textured yarns.

6. The elastic textile product according to any one of the preceding claims, wherein the stretchable thread is a synthetic-fibre thread 55 about which is spun an elastomer thread.

7. The elastic textile product according to claim 6, wherein the stretchable thread is a rubber thread about which is spun a nylon thread.

8. An elastic textile product constructed and 60 arranged substantially as herein described and as shown in the Figures of the accompanying drawing.